

WILD TURKEYS

Historical Perspective

History: Iowa's primitive oak-hickory forests covered nearly 7 million acres (2.8 million ha) during the original land survey in 1859 (Thornton and Morgan 1959). Settlers' records indicate turkeys were associated with most of this timber. Although turkeys may not have been as numerous in Iowa as in their primary range east of the Mississippi River, they were still plentiful (Peterson 1943). Unfortunately, wild turkeys were eliminated from Iowa by the early 1900's due to habitat loss and partly because of uncontrolled subsistence hunting (Little 1980).

Habitat: Only 2.6 million acres (1.1 million ha) of forest remained when the second land survey was completed in 1956, a reduction of 63% in a century, and perhaps 50% of the remaining forest was badly mismanaged through overgrazing (Thornton and Morgan 1959). In 1974, Iowa had 1.6 million acres of forestland, which made up 4.3% of the State's land area. Iowa's remnant forests now total 2.1 million acres (850,202 ha), just 5.7% of the State and only 30% of pre-settlement forests (Leatherberry et al. 1990).

Forest types throughout Iowa are second or third growth oak-hickory on uplands and elm-ash-cottonwood on floodplains (Ostrom 1976). Oak types constitute 55% of all forest stands, with red oak - white oak - hickory (35% of all forests) dominant in all regions. Maple-basswood stands (10%) are found on mesic sites and are climax in the northeast and central regions, but are replaced by white oak (10%) and short, scrubby burr oak (10%) in the southern

and arid western regions, respectively. Aspen and other northern hardwoods (1%) are found occasionally in the Northeast. Statewide, 65% of all commercial stands are entering sawtimber and 20% are in poletimber (Leatherberry et al. 1990). Ninety-two percent of Iowa's forest land is privately owned, with nearly half of the remaining 8% in state ownership, 38% owned by other public agencies and 14% in park-refuges withdrawn from active management (Ostrom 1976, Leatherberry et al. 1990). Iowa has no national forests, parks or wildlife refuges devoted to forest land management.

Restoration: The Iowa Department of Natural Resources (IDNR) began experimenting with turkey restoration in 1920 using pen-reared birds. Releases were made over the next 18 years but all releases were uniform failures.

The first attempts at releasing transplanted wild turkeys were in the early 1960's. Rio Grande and Merriam's subspecies were released at several sites during the 1960's but ultimately their poor adaptation to Iowa's oak-hickory forest led to population failures for both subspecies.

The first release of eastern wild turkeys was in 1966 in Lee County. The population response of these turkeys was phenomenal – survival of released birds, reproduction, and poult survival were all excellent. The success of this eastern subspecies stocking led to an additional stocking that also proved successful. By 1971 it was obvious that the Eastern subspecies was the turkey to use in future restoration attempts.

Since the initial 1965 release,

3,578 Eastern wild turkeys have been trapped and released at 259 sites at a stocking rate of approximately 3 adult gobblers and 10 hens per site. Nearly all sites are considered successful, however the most recent stockings are still being evaluated. No sites are currently considered to be unsuccessful. Most sites were opened to hunting after populations were established, usually about 5 years post-stocking. Restorations by the IDNR during the last 2 decades have returned wild turkeys to about 95% of the remnant timber stands in the state. Restoration efforts ended in 2001 with the last release site occurring in Linn county.

Spring Harvest Survey

History: Spring bearded-turkey-only hunting seasons began in 1974. The objective of Iowa's spring season has been to maximize hunting opportunity while maintaining a quality hunting experience. Quality hunting is defined as the chance to hunt turkeys reasonably free of interference from other hunters. The primary method used to reduce interference is to control hunter densities through license quotas established for multiple zones and seasons.

Annual licenses issued, hunters, and harvest increased gradually from 1974-87 (Fig. 2.1). During 1988-99, there were dramatic increases in license issue and hunter numbers due to an unlimited license quota in the fourth season. The area open to spring turkey hunting in Iowa also increased dramatically from 2 small southern zones and 1 larger northeast zone in 1974 to the entire state during the 1999 spring season (Fig. 2.2, a and b). Hunter numbers and timber acres with huntable turkey populations have increased

proportionally, allowing hunter densities to remain at < 4 hunters/mi² of timber per season.

2001: Iowa's 28th modern spring hunting season increased in the number of active hunters, even though license sales decreased slightly (Table 2.1 and 2.2). Harvest decreased slightly in 2001 by a few hundred (Table 2.3). This was the thirteenth year the entire state was open to spring turkey hunting (Table 2.11). The 35-day season (16 April through 20 May, 2001) was partitioned into 4 separate seasons: 4, 5, 7, and 19-days in length, respectively. The 4-season format, with unlimited license quota an unlimited license quota for all the periods, resulted in 53,995 resident shotgun licenses issued. An additional 2,206 archery-only licenses were issued. In spring 2001, archers were allowed to purchase up to 2 permits. Archery-only harvest surveys have ceased because of poor survey response compliance by archery-only hunters. However, archery-only harvest and success rates varied little during the years with survey information.

Forty-three percent of the hunters were successful in harvesting a gobbler in 2001 (Table 2.4). Spring harvest success rates fluctuated around 20-30% during the first 12 years (unweighted average = 25.1 for 1974-85) but success increased each year during 1985-88 (Fig. 2.3). Declines observed in spring hunter success rates during 1983 and 1984 (Fig. 2.3) can be partially explained by poor brood production during the summers of 1981 and 1982 (Fig. 2.4). Similarly, the decline in hunter success rates between 1988 and 1993 may be explained by 6 years of poor brood production starting in 1988. The success rates over the last five years averaged 43.5%.

This was the twelfth spring that

non-residents were allowed to hunt turkeys in Iowa. All available non-resident licenses were issued. Ninety-one percent of the non-resident hunters that were issued a license actually hunted and they harvested an estimated 941 wild turkeys (Tables 2.2 and 2.3). Non-residents were more successful than residents in harvesting a spring gobbler (51.6% versus 43.1%, respectively) (Table 2.4)

Fall Harvest Survey

History: Fall, any-sex turkey hunting was initiated in Iowa in 1981 to provide additional hunting recreation from the wild turkey resource. Because any-sex hunts are more controversial than male-only hunts and potential exists for overharvesting hens, carefully controlled fall hunts began in 1981 on an experimental basis. These hunts occurred in portions of southern Iowa which had established, stable turkey populations. Fall turkey hunting has changed dramatically since the initial experimental 1981 season. The area encompassed by fall hunting zones has increased from 2 small zones in southern Iowa during 1981 to 8 zones in 1999 that contain the majority of Iowa's turkey population (Fig. 2.5, a and b). Fall zone boundaries in 1990 encompassed 9.7 times more area than in 1981 (Table 2.12) and geographically different regions were added to open zones, notably the west and northeast portions of Iowa. Although zone boundaries did not change during 1991 - 1994, only zones 3 and 6 (northeast Iowa) had shotgun licenses available (residents only). The 5 remaining fall zones experienced 6 years of poor brood production and therefore did not have any licenses available. However in

1995, because of increased brood production in 1994, almost the entire state was opened to fall hunting. In 1999, the amount of land open to fall hunting increased slightly from 1998 with the addition of zone 8 (Fig. 2.5).

Results from a radio-telemetry study in southern Iowa and computer modeling of southern Iowa turkey mortality and hatching data suggest as much as 10% of the population could be removed during fall hunting without reducing long-term turkey populations. Past seasons' harvest have not approached this theoretical value. The present management objective is to increase fall hunting opportunities and harvest. A harvest of fall turkeys similar to the number of spring gobblers harvested is the present goal.

The number of fall licenses issued, hunter numbers and harvest increased steadily from 1981-89 (Fig. 2.6 and Tables 2.5-2.7).

As with spring seasons, fall turkey hunters have previously had exceptional Statewide success rates, averaging 51% during 1981-89 (Table 2.8). However fall success rates have had considerable annual variation, ranging from 40 - 60% (Fig. 2.3). Fall license quotas generally surpassed applications from 1981-84 and license quotas filled in only one zone in 1985. With the expansion of 2 hunting zones in 1986 a large increase in applications occurred. This resulted in rejecting a number of permit applications. License quota was increased in 1987 and in 1988. After 2 application periods in fall 1988, 51 licenses remained. Therefore license quota remained unchanged in 1989 although the hunting zone area increased (Table 2.12). Because of the documented poor poult production in 1988 and 1989, license quota remained

unchanged for 1990. Fall 1990 hunting zones were expanded to distribute (and hopefully reduce) hunting pressure on flocks. Continued poor statewide brood production warranted dramatic reductions in fall harvest for 1991 - 1994. Only the northeast corner (Zones 3 & 6) continued to have average brood production that allowed a fall shotgun season

Annual changes in hunter success, harvest and the age-sex composition of the fall harvest are at least partly explained by population events occurring in southern Iowa from 1981 to 1985. Excellent recruitment in the years of 1978 through 1980 produced very high turkey densities (100 wintering turkeys/mi² of forest on the southern Iowa Stephens Forest study area and region-wide densities of at least 40-50/mi²). A cool wet spring in 1981 led to essentially no recruitment just prior to the first fall season. A large carryover of adults from previous successful hatches meant that hunters had high success rates in the fall of 1981, but harvested almost no juvenile turkeys. A slightly better hatch in 1982, coupled with the reduction in available adult turkeys, led to proportionally more juveniles in the bag in 1982, but the harvest and success rates were reduced. A good hatch in 1983, produced more juveniles in the bag and an increased harvest, suggesting populations were recovering from a 2-year depression. Another good hatch in 1984 resulted in even more juveniles in the bag and again an increased harvest. Fall 1985 was similar to 1984. The greatest effect was felt in southern Iowa where spring weather was least favorable in both 1981 and 1982. Indications of overharvest on popular public hunting areas was greatest in the years when few juveniles

were present to buffer adult turkey harvest. Harvest rates of adult hens (> 2 years old), the most important age class reproductively, were greatest when few juveniles were produced and decreased to tolerable levels when recruitment was good.

A similar scenario developed during the recent 6-year (1988-93) decline in poult production. Climatic factors, i.e., 2 years of drought followed by floods in 1990, 1991, and 1993, are assumed responsible for the reduced poult production observed over that time period. Likewise, harvest and hunting success declined over the same period, presumably as a result of the decrease in poult production. Fall harvest and hunting success rate increased in 1995 following a slight increase in poult production in 1994. Harvest and hunter success increased slightly again in 1996, 1997, 1998 and 1999, but decreased slightly in 2000 and 2001. However, fall harvest levels continue to be well below the levels observed in the mid-1980's.

2001: Wild turkey brood production was down slightly in 2001, and fall turkey hunter success rates also decreased slightly. Since the IDNR's main objective for wild turkeys is to maintain populations in all suitable habitats and provide high quality recreational opportunity, a conservative fall turkey hunting season was established in 1992. Shotgun license quota was reduced from 7,600 licenses available in 1990 to only 1,530 in 1992, 1993, and 1994. An increase in poult production was observed in 1994, and shotgun license quota was increased in 1995 to 3,450. Quotas were increased slightly again in 1996 to 3,850, to 4,550 in 1997, to 5,650 in 1998, to 6,225 in 1999. In 1999, zone 8 was created in north central Iowa and zone 6 was

reduced east to Highway 63. All other zone boundaries remained the same as in 1998, and all zones had licenses available. In 2001, zones and quotas remained the same as 2000 and 1999. Shotgun license issue (paid and free combined) decreased from the 2000 level to 11,225 for the 47-day season that ran from 15 October through 30 November, 2001 (Table 2.12). Over 42% of the shotgun licenses were issued free to landowners. An additional 1,496 archery-only licenses were issued for a season that ran from 1 October through 30 November, 2001 and 18 December, 2001 through 10 January, 2002. Only 6,069 shotgun hunters actually hunted for turkeys during fall 2001. Forty-five percent of the active hunters harvested a turkey. Hunter success rates varied from 16% in zone 1 to 74% in zone 2 (Table 2.8). Nonresidents were not permitted to hunt fall turkeys in Iowa this year.

Discussion: Fall turkey hunting techniques are sufficiently different from spring hunting so that past experience with spring hunting seems to have little impact on success in the fall. If anything, reliance on camouflage, sitting still, and calling (the basic spring hunting method) may be less successful and less utilized than walking and flushing turkeys in the small woodlot situations which comprise the bulk of Iowa turkey habitat. Even though fall shotgun success rates are quite high, fall turkey hunting has not been popular. It doesn't seem to appeal to spring hunters and hunter numbers seem to be more related to zone size than anything else. Fall archery hunting has even fewer devotees.

In spite of these differences between spring and fall hunting, they have one important feature in common -- hunter concentrations on public hunting

areas. Hunter densities are much greater on public hunting areas than on private lands. By the nature of fall hunting this has less impact on perceived interference between hunters than it does in spring hunting. Crowding leads to lower success rates on public areas and, on the largest most popular areas, there are some indications of excessive harvest over theoretically desirable levels. Any area that the IDNR intends to manage for quality spring hunting may have to be zoned separately in the fall.

Even in years of documented poor reproduction, hunters can still find turkeys due to Iowa's limited forest habitat and high turkey densities. Although success rates have declined each year since 1987, success still remains high for hunters who actually hunt. Interference rates between hunters have not been documented in the fall since 1985. Interference rates have been lower during fall than in spring, which is probably due to the different techniques used for spring and fall hunting.

Fall turkey hunter densities on public areas (that were surveyed) have been nearly 50 times greater than the average hunter density for private land. Turkey harvest densities on 13 of 16 public areas surveyed equaled or exceeded the theoretical maximum allowable harvest of 2 turkeys/mi² of forest as determined from empirical population data gathered from Stephens State Forest (IDNR, unpubl. data). In 1986, only 4 counties sustained > 4 hunters/mi² of forest, combined with turkey harvests of > 2/mi² of forest. In 1987, with the large increase in licenses issued, 12 counties had both hunter densities > 4, and turkey harvest > 2/mi² of timber (out of 43 counties with reporting hunters). The high seasonal hunter densities were somewhat reduced

by a 28-day season during 1987. No more than 34% of the hunters and 39% of the eligible hunters (those who had not yet bagged a turkey) were afield on any day. The opening 2 days and 4 weekend days were the most popular hunting days. There were no evident relationships between daily hunting pressure and daily success rates. To reduce daily hunter densities, hunter interference rates and increase fall recreation days, the 1988 fall season was extended to 49 days (October 10 - November 27). However, a large increase in licenses issued in 1988 increased the number of counties exceeding allowable harvest and hunter density values to 16 (out of 53 counties with reported turkey harvest). Another record license issue in 1989 resulted in 24 counties (of 49 counties with reported turkey harvest) exceeding >4 hunters, and >2 turkeys harvested/mi² of timber. Fewer licenses were issued in 1990 and correspondingly only 16 counties exceeded hunter and harvest rate maximums. Due to continued poor brood production, both hunter numbers and harvest was dramatically reduced during 1991 - 1993 and increased only slightly throughout 1994-2000, but decreased slightly in 2001. Unfortunately, the present management concern is how to maintain turkey numbers instead of the enviable situation of being concerned about hunter densities.

Brood Survey

History: Information on annual variations in turkey productivity is needed to evaluate the status of turkey populations in various regions of the state. Because few reliable wild turkey census techniques have been developed,

hunter success rates, turkey harvest levels, and age ratios of harvested birds are the best available indicators of relative turkey populations between hunting zones. Lewis (1975a, b) found significant correlations between both August poult:hen ratios, percent juveniles in the harvest, and total gobbler harvests in the subsequent spring in Missouri, suggesting that an index to productivity would be useful in establishing hunting regulations.

Compared to the more formalized census procedures used for more visible wildlife species, indices to eastern wild turkey productivity are generally based on random observations of broods.

Methods: A list of cooperators has been established from IDNR personnel and rural residents living in selected portions of Iowa containing established turkey populations. All rural residents living in designated survey areas are sent a form to be returned if they are willing to participate in the survey. Each cooperator is sent return-addressed postcards which are to be completed and returned based on turkey broods sighted between 1 July and 31 August. Productivity indices are constructed from these returns.

Hanson (1988) compared the brood survey data with spring turkey harvest and data from a radio-telemetry study in southern Iowa. The poult:hen ratio (young/adult) was the variable that correlated best with the telemetry data. Results of additional analyses indicated that the brood survey did have some utility for forecasting turkey numbers available to the hunters in following springs. Additionally, Hanson concluded that in light of the correlations with harvest data the brood survey may also be useful for evaluating

the status of turkey populations in various regions of the state. Survey statistics for 1976-1999 are summarized in Tables 2.9 and 2.10.

2001: Statewide: Wild turkey poult production per hen during 2001 (4.7 poults) was slightly lower than 2000 based on 2,185 observations statewide (Table 2.9; Fig. 2.4). The percent of hens with broods was also lower than 2000 estimates (Table 2.10). Evidence of decreased production in 2001 was an observed decrease in average turkey flock size (Fig. 2.4). However, production values were only slightly below the statewide average for the past 5 years. The 2001 production index (which combines the number of poults per hen and the percent of hens with brood) also decreased slightly from 2000 and is still below 1983-87 levels.

Northeast Region: The northeast region's production index much higher than the values obtained for 2000. This region continues to maintain relatively high production index values compared to other areas of the state.

Southern Region: The southern region's poult/hen ratio decreased slightly from 2000 and the number of birds per flock decreased slightly. The percent of hens with brood also decreased from 2000 levels.

Central Region: The number of poults per hen and the number of birds per flock increased in 2001 in the central region from the values observed in 2000. However, the percent of hens with brood decreased.

Western Region: In 2001, the western region experienced increases in the birds/flock, but experienced decreases in poult/hen ratio and the percent of hens with brood.

East-Central Region: The east-

central region data indicated a slight decrease in poult production over 2000. Decreases occurred in the percent of hens with brood and the number of poults/hen increased. However, the number of birds per flock increased slightly.

Northwest Region: This region experienced the most decrease in turkey production from 2000, with decreases in all 3 categories. However, values were similar to previous year's records.

North-Central Region: The number of birds per flock and the number of poults/hen increased substantially in the north-central region over 2000 levels, but the percent of hens with broods decreased.

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Table 2.1 Number of Iowa spring turkey-hunting licenses issued by zone, 1974-present.
Archery-only licenses not included.

YEAR	ZONE					RESIDENT TOTAL	NON- RESIDENT
	1	2	3	4	5		
1974	105	113		82		300	
1975	168	184		248		600	
1976	143	273		558		974	
1977	235	276		494		1,005	
1978	280	323		1,212		1,815	
1979	195	298		2,662		3,155	
1980	195	225	357	3,227		4,004	
1981	195		420	4,374	67	5,056	
1982			297	6,592	135	7,024	
1983			300	7,231	165	7,696	
1984	259	416	325	9,849	277	11,126	
1985	259	449	320	9,379	277	10,684	
1986	273	493	339	11,032	356	12,493	
1987	289	507	357	11,828	404	13,385	
1988	268	471	324	16,438	632	18,133	
1989	268	505	338	20,091	736	21,938	
1990	261	500	322	25,331	1,030	27,444	184
1991	262	505	322	26,399	1,115	28,603	306
1992	260	487	320	28,220	1,083	30,370	445
1993	260	500	320	28,646	1,060	30,786	585
1994	262	508	324	30,714	-	31,808	602
1995	260	500	320	30,269	-	31,349	955
1996	260	487	302	35,740	-	36,789	1,124
1997	261	501	320	39,314	-	40,396	1,346
1998	260	500	320	39,783	-	40,863	2,005
1999	260	500	320	43,008	-	44,088	1,999
2000	257	392	242	55,290	-	56,181	2,013
2001	104	148	108	53,635	-	53,995	2,012

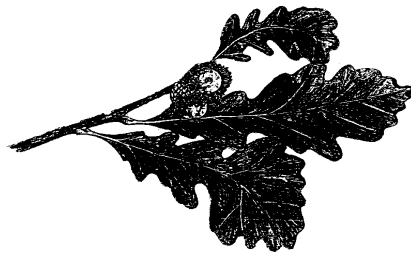


Table 2.2 Number of estimated active Iowa spring turkey hunters by zone 1974-present.
Archery-only licenses not included.

YEAR	ZONE					RESIDENT TOTAL	NON- RESIDENT
	1	2	3	4	5		
1974	92	99		92		283	
1975	149	168		223		540	
1976	124	237		484		845	
1977	202	251		435		888	
1978	255	289		1,078		1,622	
1979	174	272		2,381		2,827	
1980	176	213	307	2,909		3,605	
1981	176		379	3,956	61	4,572	
1982	493	447	270	4,911	123	6,244	
1983	447	441	263	5,523	161	6,835	
1984	233	371	260	8,676	243	9,783	
1985	232	403	292	8,395	249	9,571	
1986	232	445	308	9,581	319	10,885	
1987	236	440	327	10,283	355	11,641	
1988	246	429	298	14,152	547	15,672	
1989	225	442	319	15,193	588	16,767	
1990	231	456	301	21,085	862	22,935	174
1991	234	477	289	20,905	868	22,773	273
1992	200	351	213	24,321	919	26,004	418
1993	124	391	197	24,648	888	26,248	542
1994	157	365	217	26,561	-	27,300	527
1995	113	331	211	26,734	-	27,389	881
1996	178	331	169	31,591	-	32,269	1,057
1997	152	356	210	34,314	-	35,032	1,229
1998	174	395	226	35,759	-	36,554	1,858
1999	139	336	179	37,873	-	38,527	1,803
2000	183	287	159	46,705	-	47,334	1,841
2001	75	103	92	47,327	-	47,597	1,822



Table 2.3 Number of estimated spring turkeys harvested by zone, 1974-present.
Archery-only licenses not included.

YEAR	ZONE					RESIDENT TOTAL	NON- RESIDENT
	1	2	3	4	5		
1974	41	31		30		102	
1975	29	41		69		139	
1976	38	37		119		194	
1977	60	53		102		215	
1978	54	72		240		366	
1979	55	41		592		688	
1980	50	43	35	860		988	
1981	49	40	58	1,267	25	1,439	
1982	75	112	48	1,411	39	1,685	
1983	76	113	38	1,469	33	1,729	
1984	32	83	40	2,015	51	2,221	
1985	29	138	67	2,831	62	3,127	
1986	49	183	75	3,570	97	3,974	
1987	83	198	114	4,667	147	5,209	
1988	79	151	86	6,493	250	7,059	
1989	49	133	42	6,264	211	6,699	
1990	48	148	106	7,452	363	8,117	74
1991	58	144	78	7,414	274	7,968	128
1992	37	71	31	9,348	255	9,742	151
1993	26	97	39	8,638	293	9,093	217
1994	57	81	32	10,428	-	10,598	229
1995	20	81	32	10,275	-	10,408	459
1996	49	77	36	13,078	-	13,240	544
1997	8	68	28	14,647	-	14,751	605
1998	15	73	46	15,676	-	15,810	938
1999	30	71	28	17,231	-	17,360	930
2000	37	60	24	20,759	-	20,880	970
2001	34	49	29	20,383	-	20,495	941

Table 2.4 Estimated success rate of active Iowa spring turkey hunters by zone, 1974-present. Archery-only hunters not included.

YEAR	ZONE					RESIDENT	NON-
	1	2	3	4	5	TOTAL	RESIDENT
1974	44.6	31.3		32.6		36.0	
1975	19.5	24.4		30.9		25.7	
1976	30.6	15.6		24.6		23.0	
1977	29.7	21.1		23.4		24.2	
1978	21.2	24.9		22.3		22.6	
1979	31.6	15.1		24.9		24.3	
1980	28.4	20.2	11.4	29.6		27.4	
1981	27.8		15.3	32.0	41.0	31.5	
1982	15.2	25.1	17.8	28.7	31.7	27.0	
1983	17.0	25.6	14.4	26.6	20.5	25.3	
1984	13.7	22.4	15.4	23.2	21.0	22.7	
1985	12.5	34.2	22.9	33.7	24.9	32.7	
1986	21.1	41.1	24.4	37.3	30.4	36.5	
1987	35.2	45.0	34.9	45.4	41.4	44.7	
1988	32.1	35.2	28.9	45.9	45.7	45.0	
1989	21.8	30.1	13.2	41.2	35.9	40.0	
1990	20.8	32.9	35.0	35.3	42.1	35.3	40.0
1991	24.9	30.7	27.8	35.6	31.1	35.1	45.0
1992	19.1	21.0	16.0	38.5	27.9	37.4	36.0
1993	21.2	24.8	19.7	35.0	32.9	34.6	40.0
1994	36.3	22.2	14.7	39.3	-	38.8	43.5
1995	17.7	24.5	15.1	38.7	-	38.0	52.1
1996	27.5	23.2	21.3	41.4	-	41.0	51.5
1997	5.3	19.1	13.3	42.7	-	42.1	49.2
1998	8.6	18.5	20.4	43.8	-	43.3	50.5
1999	21.6	21.1	15.6	45.5	-	45.1	51.6
2000	20.2	20.9	15.1	44.4	-	44.1	52.7
2001	45.3	47.6	31.5	43.1	-	43.1	51.6

Table 2.5 Number of licenses issued to Iowa fall turkey hunters by zone, 1981-present.

In 1984 and 2001 landowners were not broken-down by zone but do appear in the total.

No non-resident licenses issued for fall turkey during 1991-2001.

YEAR	ZONE								RESIDENT		NON-RESIDENT
	1	2	3	4	5	6	7	8	BOW	TOTAL	
1981				1,946					193	2,139	
1982				1,995					353	2,348	
1983				1,873					529	2,402	
1984				1,999	214	612			552	3,414	
1985				2,143	295	784			540	3,762	
1986	121	190		2,403	296	1,206	74		663	4,953	
1987	107	149	105	3,934	340	2,264	148		877	7,924	
1988	103	203	106	4,861	524	4,054	282		1,243	11,376	
1989	102	200	100	6,194	891	5,792	554		1,022	14,855	157
1990	102	201	101	5,879	738	5,422	624		610	13,677	50
1991	0	0	50	0	0	4,575	0		942	5,567	0
1992	0	0	30	0	0	3,560	0		963	4,553	0
1993	0	0	30	0	0	3,118	0		488	3,636	0
1994	0	0	30	0	0	3,300	0		949	4,279	0
1995	50	50	50	2,593	330	3,518	320		715	7,626	0
1996	50	50	50	2,635	447	4,048	321		944	8,545	0
1997	50	50	50	2,156	425	4,287	224		768	8,010	0
1998	50	50	50	3,653	450	4,747	440		697	10,137	0
1999	50	50	50	3,778	433	4,894	422	212	1,317	11,206	0
2000	49	47	50	5,052	471	5,083	471	260	1,531	13,014	0
2001	44	29	38	2,500	300	2,401	200	75	1,496	11,225	0

Table 2.6 Number of estimated active turkey hunters in Iowa fall turkey seasons by zone, 1981-present. Same problem for 1984 and 2001 as in Table 2.5. No licenses in 1991-94 for zones other than 3 & 6. Bow hunters not surveyed after 1990. No non-resident licenses issued for fall turkey during 1991-2001.

YEAR	ZONE									RESIDENT		NON-RESIDENT
	1	2	3	4	5	6	7	8	UNK	BOW	TOTAL	
1981				1,710						136	1,846	
1982				1,807						290	2,097	
1983				1,650						425	2,075	
1984				1,763	185	530				473	2,981	
1985				1,906	250	699				445	3,300	
1986	89	168		1,953	251	1,025	68			543	4,097	
1987	76	137	92	2,966	264	1,702	87			738	6,062	
1988	100	203	91	3,576	418	3,173	249			1,066	8,876	
1989	83	187	82	4,679	585	4,572	374			846	11,408	139
1990	41	125	55	4,326	509	4,125	400			502	10,083	47
1991			35			3,064				?	3,099	0
1992			22			2,362				?	2,384	0
1993			12			2,157				?	2,169	0
1994			12			2,343				?	2,355	0
1995	30	11	33	1,943	245	2,740	234			?	5,236	0
1996	14	14	16	1,727	334	3,038	195			?	5,338	0
1997	21	18	11	1,572	336	3,293	218			?	5,469	0
1998	11	27	11	2,678	337	3,530	297			?	6,891	0
1999	22	29	21	2,701	347	3,605	300	161	79	?	7,265	0
2000	11	26	23	3,300	355	3,523	309	171	56	?	7,774	0
2001	19	20	10	1,835	221	1,809	157	67	234	?	6,069	0

Table 2.7 Estimated harvest for Iowa fall turkey hunting by zone, 1981-present. Same problem for 1984 and 2001 as in Table 2.5. Same comments about 1991-94 as in Table 2.6.

YEAR	ZONE									RESIDENT		NON-RESIDENT
	1	2	3	4	5	6	7	8	UNK	BOW	TOTAL	
1981				808						5	813	
1982				769						10	779	
1983				813						20	833	
1984				882	77	198				36	1,210	
1985				1,215	108	376				54	1,753	
1986	29	69		1,041	127	536	28			43	1,873	
1987	24	40	35	1,842	99	961	33			102	3,136	
1988	57	106	36	1,950	171	1,799	159			149	4,427	
1989	18	127	26	2,208	287	2,442	104			66	5,278	67
1990	0	33	39	2,052	190	2,084	135			41	4,574	14
1991			18			1,368				?	1,386	
1992			13			943				?	956	
1993			2			912				?	914	
1994			2			1,122				?	1,124	
1995	10	2	10	912	137	1,358	52			?	2,481	
1996	4	5	12	787	176	1,472	93			?	2,549	
1997	1	14	4	883	145	1,480	86			?	2,613	
1998	3	8	4	1,384	176	1,773	120			?	3,468	
1999	4	10	3	1,619	156	1,943	150	66	63	?	4,014	
2000	2	15	8	1,701	179	1,527	93	56	38	?	3,619	
2001	3	15	2	852	100	912	61	37	168	?	2,722	

Table 2.8 Success rate of active Iowa fall turkey hunters by zone, 1981-present. Bow hunters not included in mean. Same comment for 1991-94 as in Table 2.6.

YEAR	ZONE								BOW	RESIDENT MEAN	NON- RESIDENT
	1	2	3	4	5	6	7	8			
1974											
1975											
1976											
1977											
1978											
1979											
1980											
1981				47.3					3.7	47.3	
1982				42.6					3.5	42.6	
1983				49.3					4.7	49.3	
1984				50.0	41.6	37.4			7.6	48.2	
1985				63.7	43.2	53.8			12.2	59.5	
1986	32.6	41.1		53.3	50.6	52.3	41.2		8.0	51.5	
1987	31.6	29.2	38.0	62.1	37.5	56.5	37.9		13.9	57.0	
1988	57.0	52.2	39.6	54.5	40.9	56.7	63.9		14.0	54.8	
1989	22.6	68.1	32.5	47.2	49.1	53.4	28.0		7.9	49.3	48.0
1990	0.0	26.6	71.4	47.4	37.4	50.5	33.9		8.3	47.4	29.0
1991			53.2			44.7			?	44.8	
1992			62.2			39.9			?	40.1	
1993			16.7			42.3			?	42.1	
1994			17.0			48.1			?	47.9	
1995	33.3	18.2	30.3	46.9	66.3	49.6	20.2		?	47.4	
1996	28.6	35.7	75.0	45.6	53.9	48.5	47.6		?	47.7	
1997	4.8	77.8	36.4	56.2	43.2	44.9	39.4		?	47.8	
1998	27.3	29.7	36.4	52.0	52.2	50.1	40.4		?	50.3	
1999	18.1	35.5	14.6	59.2	45.1	52.8	49.9	40.7	?	54.4	
2000	18.2	57.7	34.1	51.3	50.5	42.1	30.2	32.9	?	45.9	
2001	16.1	73.7	20.0	46.4	45.3	50.4	39.3	55.7	?	44.8	

Table 2.9 Iowa wild turkey brood survey results by region for birds/flock and young/adult, 1976-present.
Y/A=young per adult and B/F=birds per flock.

YEAR	NORTHEAST		SOUTHERN		CENTRAL		WESTERN		EAST-CENTRAL		NORTH-WEST		NORTH-CENTRAL		STATEWIDE	
	Y/A	B/F	Y/A	B/F	Y/A	B/F	Y/A	B/F	Y/A	B/F	Y/A	B/F	Y/A	B/F	Y/A	B/F
1976			4.2	10.4											4.2	10.4
1977			7.3	10.3											7.3	10.3
1978			7.5	10.7											7.5	10.7
1979			7.1	13.1											7.1	13.1
1980			7.1	13.3											7.1	13.3
1981	8.2	15.5	7.3	10.7											7.5	11.9
1982	6.1	12.6	6.2	9.3	7.1	9.5	6.6	9.5							6.3	10.5
1983	6.0	13.2	6.3	11.3	6.2	11.4	6.6	11.7	6.0	11.7					6.3	12.1
1984	6.6	12.9	7.4	11.5	4.6	10.6	6.9	12.6	6.8	10.9					6.8	11.9
1985	7.2	16.7	7.4	14.3	6.1	11.4	7.1	11.3	6.8	14.2					7.1	14.4
1986	7.0	14.1	6.2	11.8	6.6	11.7	5.7	9.3	6.8	12.5					6.6	12.4
1987	7.0	17.3	6.5	12.2	7.4	13.5	5.9	12.5	7.0	14.5					6.8	14.2
1988	5.0	17.1	5.6	10.1	5.3	11.3	4.6	12.6	6.5	14.3					5.4	13.6
1989	4.1	16.1	5.1	10.0	4.4	10.7	5.5	13.0	5.3	14.5					4.7	13.3
1990	5.1	15.8	4.9	9.0	2.7	7.9	6.0	12.2	4.9	11.9	7.7	11.3	6.6	8.3	5.1	12.8
1991	4.7	14.0	4.1	9.7	3.3	9.5	4.8	14.5	5.1	11.5	6.8	10.2	4.3	7.4	4.5	11.8
1992	4.9	11.8	4.3	9.4	3.0	9.1	6.0	10.2	4.5	11.9	3.0	4.0	10.0	11.0	4.6	10.9
1993	5.2	11.8	5.1	9.1	5.0	10.1	4.4	9.6	4.6	11.1	2.5	10.5	4.6	6.9	4.8	10.5
1994	5.3	13.1	5.1	11.6	4.1	10.0	5.1	16.9	4.9	11.5	5.1	11.0	6.2	11.6	5.1	12.3
1995	5.1	12.8	4.9	10.0	4.1	10.1	5.7	13.9	3.9	10.3	4.5	10.4	4.5	9.3	4.7	11.2
1996	4.6	10.4	4.5	9.9	3.9	9.4	4.4	11.2	4.5	10.4	3.1	11.1	4.4	8.9	4.4	10.2
1997	5.2	12.3	6.0	11.9	5.6	11.4	5.8	14.5	5.4	11.0	3.2	7.2	4.9	7.5	5.6	11.7
1998	5.1	11.9	5.3	10.0	5.9	9.8	4.6	10.0	4.5	11.6	4.0	11.9	4.4	10.5	4.9	10.9
1999	3.9	10.1	5.0	10.3	3.8	8.5	4.7	13.7	5.0	10.3	6.9	13.1	3.1	6.5	4.7	10.5
2000	4.9	10.5	5.3	10.5	3.8	8.2	5.1	12.2	5.3	11.1	6.1	17.4	3.8	6.7	5.2	10.9
2001	5.1	11.9	4.6	9.3	5.0	10.3	4.6	13.0	4.5	11.5	3.9	10.9	4.5	9.3	4.7	10.8

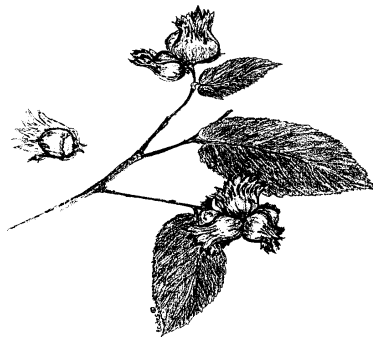


Table 2.10 Iowa wild turkey brood survey results by region for reports and percent hens with broods, 1976-present. #=total reports and %=% hens with broods.

YEAR	NORTHEAST		SOUTHERN		CENTRAL		WESTERN		EAST-CENTRAL		NORTHWEST		NORTH-CENTRAL		STATEWIDE	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
1976			78													
1977			98													
1978			77	80												
1979			170	80												
1980			142	57												
1981	65	65	194	57											259	
1982	118	62	163	60	31	42	10	23							322	
1983	117	75	148	69	34	67	40	57	77	46					416	65
1984	106	78	134	78	13	84	41	54	76	53					370	70
1985	133	81	229	82	42	94	47	57	165	65					616	76
1986	191	74	236	63	42	55	65	64	137	55					671	64
1987	266	77	353	61	79	78	70	72	138	71					906	69
1988	379	72	394	45	138	79	90	69	278	60					1,279	62
1989	364	72	408	54	92	38	137	46	303	54					1,304	57
1990	421	66	257	46	38	59	118	38	303	49	18	46	28	14	1,183	54
1991	368	57	418	47	78	40	105	46	346	55	22	46	9	35	1,346	51
1992	344	59	431	44	49	28	68	25	387	44	18	5	9	14	1,306	45
1993	265	48	290	45	37	67	75	47	330	47	12	64	28	44	1,037	48
1994	403	53	425	49	56	61	95	62	338	56	35	42	36	46	1,388	53
1995	325	57	385	35	175	28	146	40	319	53	24	58	28	80	1,403	44
1996	425	48	428	38	134	25	68	43	371	46	37	43	68	48	1,531	42
1997	310	59	589	67	67	64	141	60	356	51	27	28	82	39	1,572	58
1998	474	59	783	49	76	37	158	48	504	53	49	78	97	61	2,141	53
1999	411	52	805	60	62	54	188	60	517	49	45	57	86	35	2,114	54
2000	293	53	759	56	74	50	210	59	350	51	41	84	59	53	1,786	55
2001	429	67	803	41	73	47	228	44	486	39	61	65	105	38	2,185	46

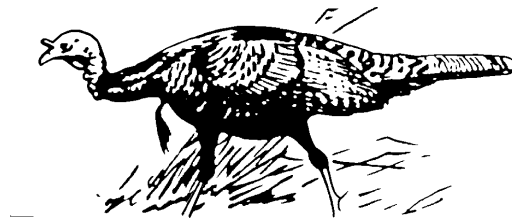


Table 2.11 Iowa's Spring turkey hunting seasons, 1974-present.

YEAR	BAG LIMIT	POSSESSION LIMIT	SEASON				SEASON SPLITS	# LENGTH	# ZONES	# SQ. MILES	MAJOR RULE CHANGES
			1	2	3	4					
1974	1	1/LICENSE	04 MAY-10 MAY	11 MAY-19 MAY				16	3	5,682	\$ 10 FEE
1975	1	1/LICENSE	26 APR-02 MAY	03 MAY-09 MAY	10 MAY-18 MAY			23	3	2,749	THIRD SEASON ADDED
1976	1	1/LICENSE	24 APR-28 APR	29 APR-05 MAY	06 MAY-16 MAY			23	4	2,884	NE IOWA CLOSED FOR RESTOCKING
1977	1	1/LICENSE	21 APR-27 APR	28 APR-04 MAY	05 MAY-15 MAY			25	4	3,200	
1978	1	1/LICENSE	20 APR-26 APR	27 APR-03 MAY	04 MAY-14 MAY			25	6	3,683	
1979	1	1/LICENSE	19 APR-25 APR	26 APR-02 MAY	03 MAY-13 MAY		ZONES 1-5	25			
			26 APR-02 MAY	03 MAY-09 MAY	10 MAY-20 MAY		ZONES 6-8	25	8	9,958	\$ 15, NE IOWA RE-OPENED
1980	1	1/LICENSE	24 APR-30 APR	01 MAY-07 MAY	08 MAY-18 MAY		ZONES 1-5	25			MUZZLELOADER LEGAL, W. IOWA OPEN,
			17 APR-23 MAY	24 APR-30 MAY	01 MAY-11 MAY		ZONES 6-9	25	9	12,942	STEPHENS SF SPECIAL ZONE
1981	1	1/LICENSE	14 APR-20 APR	21 APR-28 APR	29 APR-10 MAY			27	9	21,873	YELLOW RIVER SF SPECIAL ZONE,
											2ND CHOICE ON APP, 2 LICENSES AVAILABLE
1982	1	1/LICENSE	13 APR-19 APR	20 APR-27 APR	28 APR-09 MAY			27	8	21,506	
1983	1	1/LICENSE	12 APR-18 APR	19 APR-26 APR	27 APR-08 MAY			27	10	23,464	
1984	1	1/LICENSE	16 APR-19 APR	20 APR-24 APR	25 APR-01 MAY	02 MAY-13 MAY		28	12	25,172	ALL 3 SF SPECIAL ZONES, 4TH SEASON ADDED
1985	1	1/LICENSE	15 APR-18 APR	19 APR-23 APR	24 APR-30 APR	01 MAY-12 MAY		28	13	27,005	\$20 FEE, DECOYS LEGAL
1986	1	1/LICENSE	14 APR-17 APR	18 APR-22 APR	23 APR-29 APR	30 APR-11 MAY		28	15	39,211	COMBO GUN-BOW LICENSE, FREE
											LANDOWNER PERMIT, ARCHERY-ONLY PERMIT
1987	1	1/LICENSE	13 APR-16 APR	17 APR-21 APR	22 APR-28 APR	29 APR-10 MAY		28	13	40,202	
1988	1	1/LICENSE	11 APR-14 APR	15 APR-19 APR	20 APR-26 APR	27 APR-08 MAY		28	11	44,112	UNLIMITED 4TH SEASON PERMITS,
											ALL DAY HUNTING
1989	1	1/LICENSE	10 APR-13 APR	14 APR-18 APR	19 APR-25 APR	26 APR-07 MAY		28	5	56,043	ENTIRE STATE OPEN
1990	1	1/LICENSE	09 APR-12 APR	13 APR-17 APR	18 APR-24 APR	25 APR-06 MAY		28	5	56,043	NONRESIDENTS ALLOWED
1991	1	1/LICENSE	15 APR-18 APR	19 APR-23 APR	24 APR-30 APR	01 MAY-12 MAY		28	5	56,043	
1992	1	1/LICENSE	13 APR-16 APR	17 APR-21 APR	22 APR-28 APR	29 APR-10 MAY		28	5	56,043	\$22 FEE
1993	1	1/LICENSE	12 APR-15 APR	16 APR-20 APR	21 APR-27 APR	28 APR-09 MAY		28	5	56,043	
1994	1	1/LICENSE	18 APR-21 APR	22 APR-26 APR	27 APR-03 MAY	04 MAY-15 MAY		28	4	56,043	
1995	1	1/LICENSE	17 APR-20 APR	21 APR-25 APR	26 APR-02 MAY	03 MAY-14 MAY		28	4	56,043	
1996	1	1/LICENSE	15 APR-18 APR	19 APR-23 APR	24 APR-30 APR	01 MAY-12 MAY		28	4	56,043	
1997	1	1/LICENSE	14 APR-17 APR	18 APR-22 APR	23 APR-29 APR	30 APR-11 MAY		28	4	56,043	
1998	1	1/LICENSE	13 APR-16 APR	17 APR-21 APR	22 APR-28 APR	29 APR-10 MAY		28	4	56,043	
1999	1	1/LICENSE	12 APR-15 APR	16 APR-20 APR	21 APR-27 APR	28 APR-9 MAY		28	4	56,043	\$22.50 FEE, ARCHERS ALLOWED 2 PERMITS
2000	1	1/LICENSE	17 APR-20 APR	21 APR-25 APR	26 APR-02 MAY	03 MAY-21 MAY		35	4	56,043	
2001	1	1/LICENSE	16 APR-19 APR	20 APR-24 APR	25 APR-1 MAY	02 MAY-20 MAY		35	4	56,043	

Table 2.12 Iowa's Fall turkey hunting seasons, 1981-present.

YEAR	BAG LIMIT	POSSESSION LIMIT	SEASON SEASON	SEASON LENGTH	# ZONES	# SQ. MILES	MAJOR RULE CHANGES
1981	1	1/LICENSE	21 OCT-01 NOV	12	2	4,032	\$15 FEE
1982	1	1/LICENSE	19 OCT-31 OCT	13	2	5,254	1 GUN & 1 BOW, UNLIMITED BOW PERMITS IN SPRING ZONES
1983	1	1/LICENSE	18 OCT-30 OCT	13	2	5,254	HUNTER SAFETY REQUIRED IF BORN AFTER 1 JAN 1967
1984	1	1/LICENSE	16 OCT-28 OCT	13	3	13,685	DECOYS LEGAL; WESTERN, CENTRAL & NE IOWA OPEN
1985	1	1/LICENSE	15 OCT-27 OCT	13	3	13,685	\$20 FEE
1986	1	1/LICENSE	14 OCT-26 OCT	13	6	21,575	STEPHENS & SHIMEK SF SPECIAL ZONES, STATEWIDE BOW SEASON
1987	1	1/LICENSE	12 OCT-08 NOV	28	7	21,575	2 LICENSES POSSIBLE, YELLOW RIVER SF SPECIAL ZONE
1988	1	1/LICENSE	10 OCT-27 NOV	49	7	25,402	
1989	1	1/LICENSE	09 OCT-26 NOV	49	7	29,610	NONRESIDENTS ALLOWED
1990	1	1/LICENSE	15 OCT-30 NOV	47	7	39,191	
1991	1	1/LICENSE	14 OCT-30 NOV	48	2 OF 7	9,060	LICENSES ISSUED FOR ZONES 3 & 6 ONLY (NE IOWA), \$22 FEE
1992	1	1/LICENSE	17 OCT-29 NOV	44	2 OF 7	9,060	LICENSES ISSUED FOR ZONES 3 & 6 ONLY (NE IOWA)
1993	1	1/LICENSE	11 OCT-28 NOV	49	2 OF 7	9,060	LICENSES ISSUED FOR ZONES 3 & 6 ONLY (NE IOWA)
1994	1	1/LICENSE	10 OCT-30 NOV	52	2 OF 7	9,060	LICENSES ISSUED FOR ZONES 3 & 6 ONLY (NE IOWA)
1995	1	1/LICENSE	16 OCT-30 NOV	46	7	39,191	
1996	1	1/LICENSE	14 OCT-30 NOV	48	7	39,191	
1997	1	1/LICENSE	13 OCT-30 NOV	49	7	39,191	
1998	1	1/LICENSE	12 OCT-30 NOV	50	7	39,191	
1999	1	1/LICENSE	11 OCT-30 NOV	51	8	44,056	ZONE 8 ADDED, \$22.50 FEE
2000	1	1/LICENSE	16 OCT-30 NOV	46	8	44,056	
2001	1	1/LICENSE	15 OCT-30 NOV	47	8	44,056	

Figure 2.1 Iowa spring turkey hunting statewide estimates, 1974-2001.

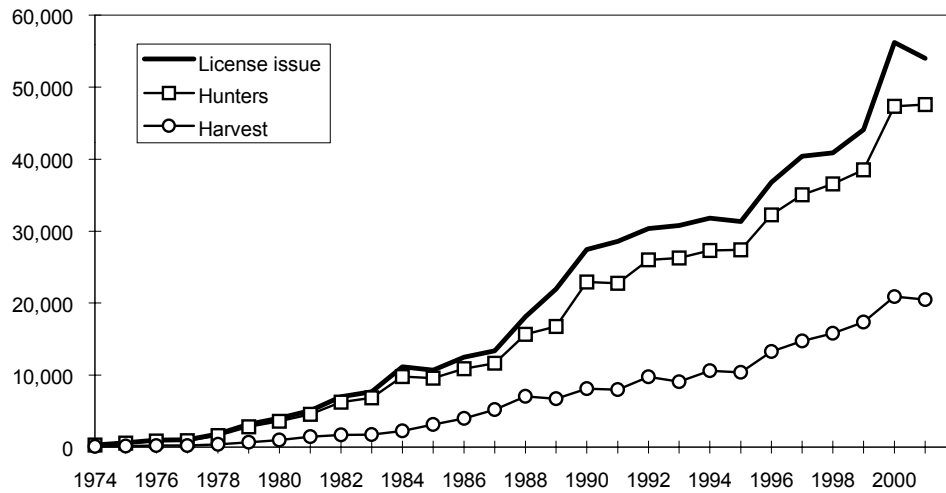


Figure 2.2 Spring turkey hunting zones, 1974 and the present.

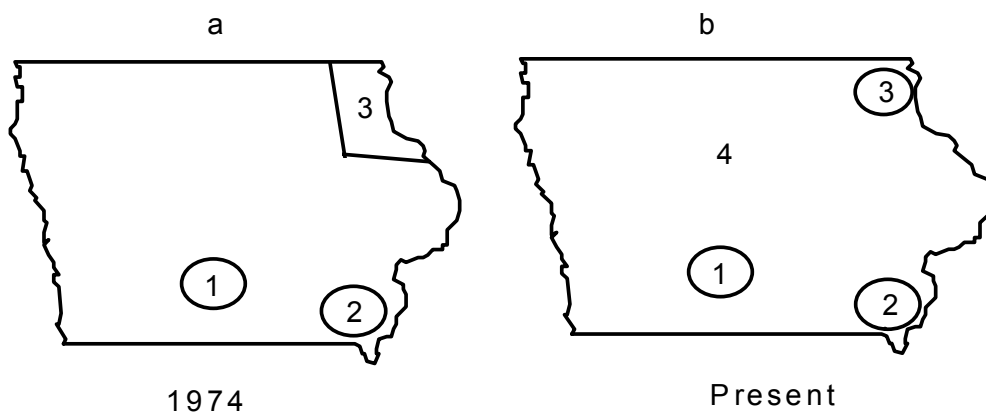


Figure 2.3 Iowa turkey harvest statewide success rates, 1974-2001.

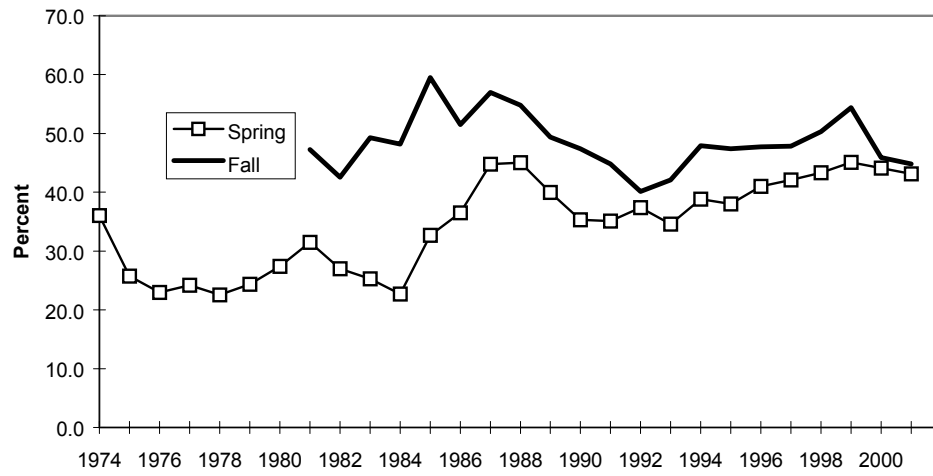


Figure 2.4 Iowa turkey brood survey statewide results, 1976-2001.

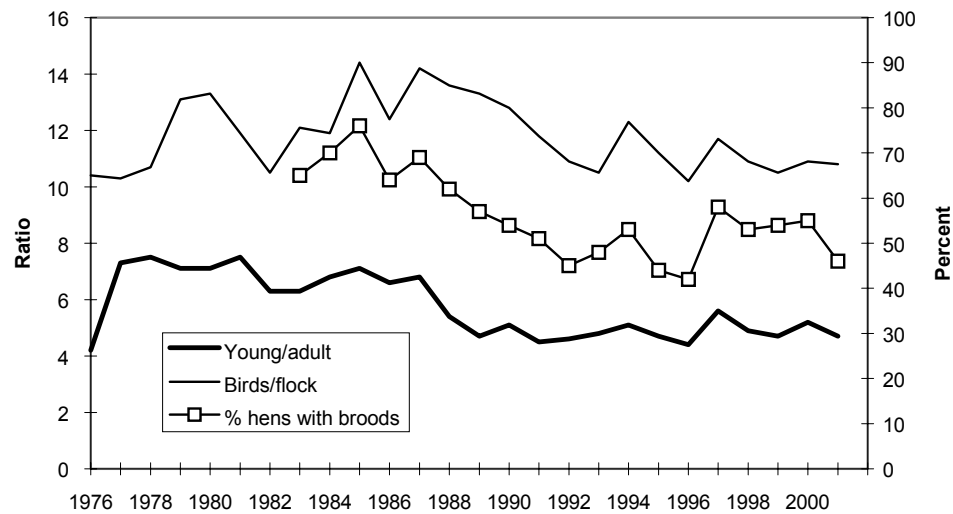


Figure 2.5 Fall turkey hunting zones, 1981 and the present.

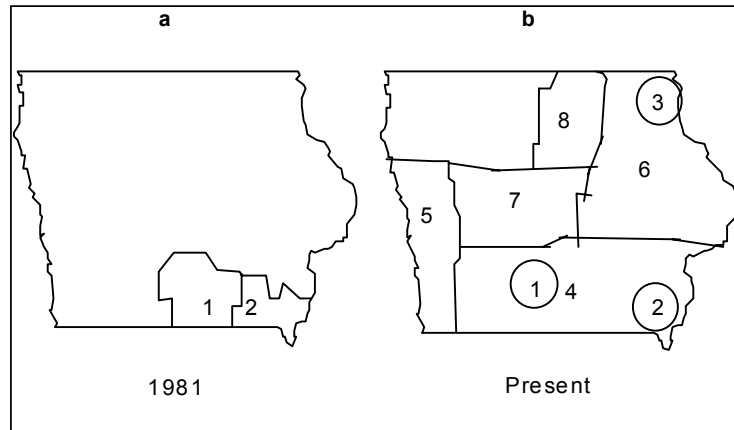


Figure 2.6 Iowa fall turkey hunting statewide estimates, 1981-2001.

